

Work Order ID 60743

Thursday, July 22, 2010 8:17:45 AM



Page 1

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 7/21/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 8/6/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: *14*Date: *10-7-22* Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
----------	--------------

D2580	Rev D
-------	-------

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

*5/10/08/12**CL 10/8/12*

110

0.00



BENDING MACHINE - SKIDTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

*(IX)**Q**MS 10-07-29**60743*

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

120

0.00



Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends

2- C'sink holes as per dwg without cutting fluid

3- Prepare tube for welding, remove alodine as required.

4- Scribe batch number insied aft end of tube.

130

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/20/104



10-7-29

Pro →

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D205-634-041 PAR #: _____ Fault Category: Skid plates NCR: Yes No DQA: [Signature] Date: 10/08/10
 Resolution: Accepted Disposition: use as is QA: N/C Closed [Signature] Date: 10/08/10

NCR: 60743		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10/08/04	#120	height in aft end bend is 1.375" R.L. Process						
10/8/4	#110.1	Aft Bend height is 1.375" Distance from aft end to 1st hole is 13.750" R.L. Bendig / Process	UP 10.08.10 QSI 042	Acceptable.	N/A 10/08/10		UP 10.08.10 QSI 042	S 10/08/04

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140



Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R□□□ Aluminum Rod

M114242

BE 10/08/04

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill
A/R□□□ Aluminum Rod

M114242

BE 10/08/04

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Deburr

5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580.
Deburr holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr

DP 10-8-10

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150 QC Quality Control	QC10- Inspect visual per QSI004- ground welds Memo	0.00 0.00							
160 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00							
170 HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.	0.00 0.00							

S 06/21/10

S 06/21/10

02

ml 10 08 11 ①

W/O:		WORK ORDER CHANGES					
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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

10:30 AM

370°F

4:00 PM

0.00

Powder Coating

190

QC3- Inspect Part Finish

0.00



QC

Memo

Quality Control

0.00

M 10 08 12 (1)

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of

Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 115114 ☐ ☐ ☐

Sikaflex expire date: 11/01

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as
per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with

Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 115114 ☐ ☐ ☐

Sikaflex expire date: 11/01

5-Wing Walk as per Dwg D2580 and QSI 005 4.4

Batch: 115028

ml 10 08 12 ①

WORK ORDER CHANGES

W/O:							
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Start Date: 7/21/2010 Start Qty: 1.00



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Required Date: 8/6/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

8106812

Memo

0.00

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

220



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPPD205-634-041

Location:

PPP Rev:

1678138

230



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

10/08/10
NF
10-8-10

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Picklist Print

Thursday, July 22, 2010 8:17:49 AM

Page 1

Work Order ID: 60743

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube




Start Date: 7/21/2010

Required Date: 8/6/2010

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:N02.08.280FP was QC5 in Step 27; Added QC5 to Step 300KJ
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2580-1  205 Skidtube bent detail		Manufactured	No			110	Each	6.0000	1	1			
<div> <div>Location</div> <div>Loc Qty</div> <div>Loc Code</div> </div>													
<div> <div>LG</div> <div>4</div> <div></div> </div>													
<div> <div>57028</div> <div>1</div> <div></div> </div>													
<div> <div>59297</div> <div>1</div> <div></div> </div>													
<div> <div>60379</div> <div>2</div> <div></div> </div>													
<div> <div>ST046</div> <div>2</div> <div></div> </div>													
<div> <div>59913</div> <div>2</div> <div></div> </div>													
D2576-3  Step (maching detail)		Manufactured	No			140	Each	90.0000	1	1			
<div> <div>Location</div> <div>Loc Qty</div> <div>Loc Code</div> </div>													
<div> <div>LG</div> <div>90</div> <div></div> </div>													
<div> <div>46661</div> <div>42</div> <div></div> </div>													
<div> <div>52215</div> <div>48</div> <div></div> </div>													
D2579  Crossbolt Spacer		Manufactured	No			140	Each	313.0000	20	20			
<div> <div>Location</div> <div>Loc Qty</div> <div>Loc Code</div> </div>													
<div> <div>LG</div> <div>313</div> <div></div> </div>													
<div> <div>57052</div> <div>5</div> <div></div> </div>													
<div> <div>57348</div> <div>4</div> <div></div> </div>													
<div> <div>58433</div> <div>14</div> <div></div> </div>													
<div> <div>59113</div> <div>290</div> <div></div> </div>													

D.59856 MB 10-07-29

BE 10/08/04

BE 10/08/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Page 2

Work Order ID: 60743

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 7/21/2010

Required Date: 8/6/2010

Start Qty: 1.00

Required Qty: 1.00

D2855

Manufactured No

200

Each

83.0000

1

1



Cap

Location

Loc Qty

Loc Code

FP6

1

56613

1

ST026

82

50513

1

50770

28

51539

2

53791

51

AN3-5A

Purchased

No

200

Each

1,128.000

2

2



Bolt

Location

Loc Qty

Loc Code

ST350

1128

105057

628

115016

500

AN960JD10L

NAS1149D0332J

Purchased

No

200

Each

3,021.000

2

2



Washer

Location

Loc Qty

Loc Code

ST348

3021

110985

3021

MA 10-08-12

MA 10-08-12

MA 10-08-12

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Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
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Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 7/21/2010

Required Date: 8/6/2010

Start Qty: 1.00

Required Qty: 1.00

ALS7-1032-130

Purchased

No

200

Each

950.0000

50

50



Insert

★ B# 114723

Location

Loc Qty

Loc Code

FP

933

115079

933

ST282

17

113238

17

mt 10-08-12

AN3C4A

Purchased

No

200

Each

1,520.000

50

50



BOLT

Location

Loc Qty

Loc Code

ST350

1520

114103

501

114108

14

114416

12

114523

2

114941

991

mt 10-08-12

AN960C10L

NAS1149C0332

Purchased

No

200

Each

0.0000

50

50



washer

D3566-13



Gasket

B# 115000

★

Manufactured

No

200

Each

35.0000

1

1

mt 10-08-12

Location

Loc Qty

Loc Code

FP

4

53461

4

FP012

31

59661

23

60209

8

mt 10-08-12

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Page 3

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Start Date: 7/21/2010

Required Date: 8/6/2010

Start Qty: 1.00

Required Qty: 1.00

D3566-5 Manufactured No

200 Each

16.0000

1

1



Gasket

Location

Loc Qty

Loc Code

FP015

16

59158

16

D3566-1 Manufactured No

200 Each

21.0000

2

2



Gasket

Location

Loc Qty

Loc Code

FP015

21

57715

2

59126

7

60202

12

D3564-11 Manufactured No

200 Each

10.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP019

10

59941

10

D3564-13 Manufactured No

200 Each

19.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP17

19

59660

19

mm 10.08.12

mm 10.08.12

mm 10.08.12

mm 10.08.12

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Start Date: 7/21/2010

Required Date: 8/6/2010

Start Qty: 1.00

Required Qty: 1.00

D3564-9 Manufactured No

200

Each

13.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP

1

55334

1

FP019

12

59201

12

D3564-5 Manufactured No

200

Each

16.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FG

1

34806

1

FP19

4

57525

1

58709

3

FP-19

11

59157

11

D2594-3 Manufactured No

200

Each

443.0000

16

16



O-Ring, 205 Skidtube

Location

Loc Qty

Loc Code

FP

443

55546

19

58191

12

59358

412

MA 10-08-12

MA 10-08-12

MA 10-08-12

13# 60868

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Start Date: 7/21/2010

Required Date: 8/6/2010

Start Qty: 1.00

Required Qty: 1.00

D2594-1

Manufactured

No

200

Each

451.0000

16

16



Plug, 205 Skidtube

Location

Loc Qty

Loc Code

FP

183

42807

112

55002

71

FP14

268

58434

79

59110

189

ml 10-08-12

W/O:		WORK ORDER CHANGES					
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DART

DESIGN #	DRAWN BY R4	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07.06.28 #

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

NO. 107243
08/0-1-21

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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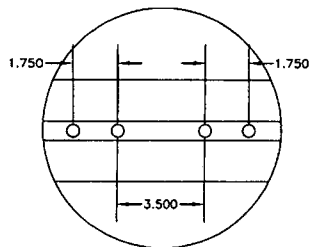
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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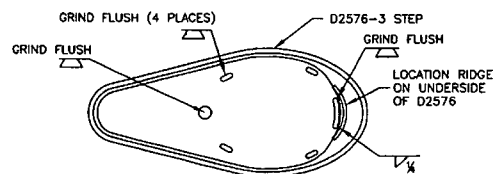
NOTE: Date & initial all entries

W6.60743

DETAIL E
SCALE 5:24

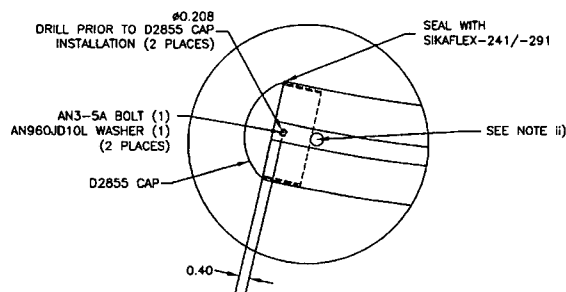


DETAIL F
SCALE 5:24

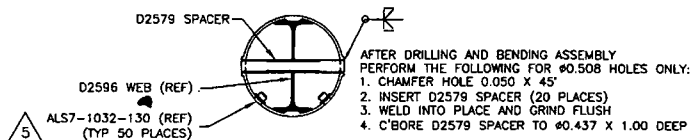


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07.06.28

DETAIL G
SCALE 5:24

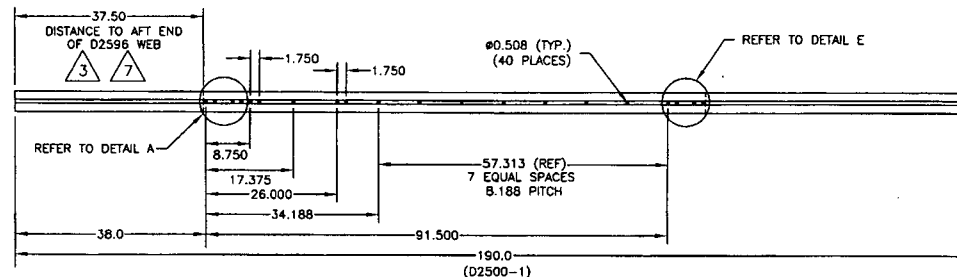


SECTION H-H
SCALE 5:24

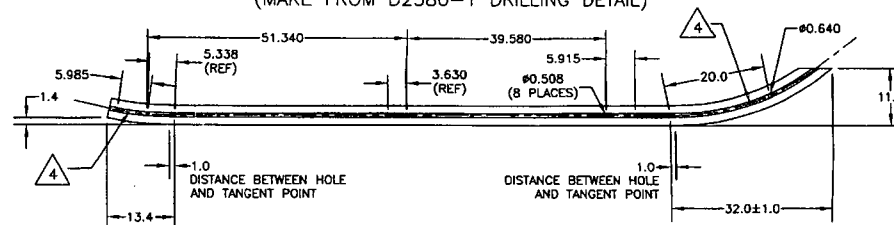


- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR #0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
 2. INSERT D2579 SPACER (20 PLACES)
 3. WELD INTO PLACE AND GRIND FLUSH
 4. C'BORE D2579 SPACER TO #0.437 X 1.00 DEEP

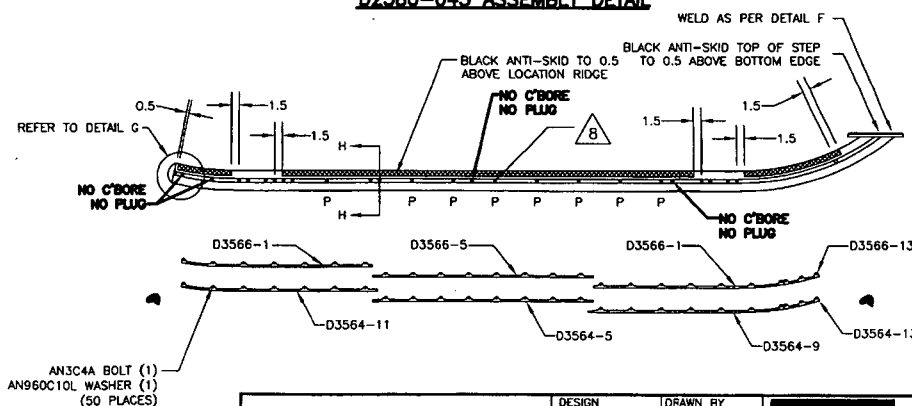
D2580-1 DRILLING DETAIL



D2580-5 BENDING AND CUTTING DETAIL
(MAKE FROM D2580-1 DRILLING DETAIL)



D2580-045 ASSEMBLY DETAIL



D2580-045 NOTES

- FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

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DESIGN RH	DRAWN BY RH	DART DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA	REV. 0
CHECKED H	APPROVED H	DRAWING NO. D2580	SHEET 3 OF 3
DATE 07.02.27	TITLE 205 SKIDTUBE ASSEMBLY	SCALE 1:24	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 232

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 59105
Part number: D205-634-041
Description: 205 skid tube
Welding Process: Tig[☒] Mig[]
Base material: Aluminium
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Pat. Dunn Date of Test Coupon 10.06.01
Welder Barclay Elliott Date of Test Coupon 10.06.01

The above named individual is qualified in accordance with AWS D17.1.2001 to weld